Chapter 15 Preapproved Wall Appendix: Specific Requirements and Details for Tensar MESA Walls

In addition to the general design requirements provided in **Appendix 15-A**, the following specific requirements apply:

The detailed design methodology, design properties, and assumptions used by Tensar Earth Technologies for the MESA wall are summarized in the HITEC evaluation report for this wall system (**HITEC, 2000, *Evaluation of the Tensar MESA Wall System*, ASCE, CERF Report No. 40358**). The design methodology, which is based on the Standard Specifications for Highway Bridges (**2002**) is consistent with the general design requirements in **Appendix 15-A**, except as noted below. Interim approval is given for the continued use of the AASHTO Standard Specifications as the basis for design.

Considering the currently approved block dimensions, the maximum vertical spacing of reinforcement allowed to meet the requirements in the AASHTO Specifications is 2 ft. Regarding horizontal spacing of reinforcement strips (i.e., rolls), reinforcement coverage ratios of greater than 0.7 are acceptable for this wall system. This is based on having a maximum of one facing block between reinforcement rolls, as allowed by the AASHTO Specifications.

Reinforcement pullout shall be calculated based on the default values for geogrid reinforcement provided in the AASHTO Specifications. For LRFD based design, while it is recognized that product and soil type specific pullout interaction coefficients obtained in accordance with the AASHTO LRFD Specifications for the Tensar products used with this wall system are provided in the HITEC report for the MESA Wall system, pullout resistance design using these product and soil specific interaction coefficients has not been calibrated using the available product specific data statistics and reliability theory. Therefore, the specified resistance factors in the GDM and AASHTO LRFD Specifications should not be considered applicable to the product specific pullout interaction coefficients provided in the HITEC report.

The reinforcement long-term tensile strengths (T_{al}) provided in the WSDOT Qualified Products List (QPL) for the Tensar Geogrid product series, which are based on the 2003 version of the product series, shall be used for wall design, until such time that they are updated, and the updated strengths approved for WSDOT use in accordance with WSDOT Standard Practice T925. Until such time that the long-term reinforcement strengths are updated, it shall be verified that any material sent to the project site for this wall system is the 2003 version of the product. Furthermore, the short-term ultimate tensile strengths (ASTM D6637) listed in the QPL shall be used as the basis for quality assurance testing and acceptance of the product as shipped to the project site per the WSDOT Standard Specifications for Construction.

The HITEC report provided connection data for the DOT^3 system and the HP System. Both systems provide partial connection coverage, with the DOT^3 system only providing 14 teeth per 21 openings, and the HP System providing 17 teeth per 21 openings. The DOT^3 system shall not be used.

The connection test results provided in the HITEC report for this wall system utilized an earlier version (i.e., before 2003) of the Tensar product series that had lower ultimate short-term geogrid tensile strengths than are currently approved in the WSDOT QPL. Since connection test data have not been provided for the combination of the stronger Tensar geogrid product series (i.e., the 2003 series), the connection

strengths in the HITEC report for the older product series shall be used, which is likely conservative. Based on the connection data provided in the HITEC report for this wall system, the short-term, ultimate connection strength reduction factor, CR_u, for the Tensar geogrid, MESA block combination using the HP Connector system is as provided in **Table 15-(Tensar MESA)-1** for each product approved for use with the MESA system. **Table 15-(Tensar MESA)-1** also provides the approved value of T_{ac}, as defined in the AASHTO LRFD Specifications, assuming a durability reduction factor of 1.1.

Tensar Geogrid Product	T_{ult} (MARV) for Geogrid per ASTM D6637 in HITEC Report (lbs/ft)	T_{ult} (MARV) for Geogrid per ASTM D6637 for 2003 Product (lbs/ft)	CR_u from HITEC Report	*CR_u if 2003 T_{ult} (MARV) Values Used	RF_{CR}	CR_{cr} if 2003 T_{ult} (MARV) Values Used	T_{ac} (lbs/ft)
UMESA3	4400	4820	0.79	0.72	2.6	0.28	1200
UMESA4	6850	7880	0.73	0.63	2.6	0.24	1720
UMESA5	9030	9870	0.80	0.73	2.6	0.28	2510
UMESA6	10,700	12200	0.75	0.66	2.6	0.25	2770

*i.e., to get same $T_{ultconn}$ value as in HITEC report.

Table 15-(Tensar MESA)-1 Approved connection strength design values for Tensar MESA walls.

T_{ac}, the long-term connection strength, shall be calculated as follows:

(15-(Tensar MESA)-1)

$$T_{ac} = \frac{T_{MARV} \bullet CR_u}{RF_{CR} \bullet RF_D}$$

where,

T_{MARV} the minimum average roll value for the ultimate geosynthetic strength T_{ult},

CR_u = the ultimate connection strength $T_{ultconn}$ divided by the lot specific ultimate tensile strength, T_{lot} (i.e., the lot of material specific to the connection testing),

RF_{CR} = creep reduction factor for the geosynthetic, and

RF_D = the durability reduction factor for the geosynthetic.

Since the HITEC report was developed, Tensar Earth Technologies has developed a new connector that provides, for the most part, a full coverage connector, providing 19 teeth per 21 openings. Short-term connection tests on the strongest geogrid product in the series shows that connection strengths higher than those obtained with the HP System will be obtained with the new connector, which is called the DOT system (note that the 3 has been dropped – this is not the same as the DOT^3 system). This new DOT System may be used, provided that the values for T_{ac} shown in **Table 15-(Tensar MESA)-1** are

used for design, which should be conservative, until a more complete set of test results are available. Photographs illustrating the new DOT connector system are provided in **figures 15-(Tensar MESA)-1 through 15-(Tensar MESA)-3**.

The longitudinal (i.e., in the direction of loading) and transverse (i.e., parallel to the wall or slope face) ribs that make up the geogrid shall be perpendicular to one another. The maximum deviation of the cross-rib from being perpendicular to the longitudinal rib (skew) shall be manufactured to be no more than 1 inch in 5 feet of geogrid width. The maximum deviation of the cross-rib at any point from a line perpendicular to the longitudinal ribs located at the cross-rib (bow) shall be 0.5 inches.

The gap between the connector tabs and the bearing surface of the geogrid reinforcement cross-rib shall not exceed 0.5 inches. A maximum of 10% of connector tabs may have a gap between 0.3 inches and 0.5 inches. Gaps in the remaining connector tabs shall not exceed 0.3 inches.

Concrete for dry cast concrete blocks used in the Tensar MESA wall system shall meet the following requirements:

1. Have a minimum 28 day compressive strength of 4,000 psi.
2. Conform to ASTM C1372.
3. The lot of blocks produced for use in this project shall conform to the following freeze-thaw test requirements when tested in accordance with ASTM C 1262:
    - Minimum acceptable performance shall be defined as weight loss at the conclusion of 150 freeze-thaw cycles not exceeding one percent of the block's initial weight for a minimum of four of the five block specimens tested.
4. The concrete blocks shall have a maximum water absorption of one percent above the water absorption content of the lot of blocks produced and successfully tested for the freeze-thaw test specified in the preceding paragraph.

It is noted in ASTM C1372 that a dimensional tolerance for the height of the block of 1/8 inch is allowed, but that **Elias, et al. (2001)**, which is referenced in the **WSDOT GDM Chapter 15** and by the AASHTO Standard Specifications for Highway Bridges (**2002**) recommends a tighter dimensional tolerance of 1/16 inch. Based on WSDOT experience, for walls greater than 25 ft in height, some cracking of facing blocks due to differential vertical stresses tends to occur in the bottom portion of the wall. Therefore, blocks placed at depths below the wall top of 25 ft or more should be cast to a vertical dimensional tolerance of 1/16 inch to reduce the risk of significant cracking of facing blocks.

Figure 15-(Tensar MESA)-1 MESA DOT system connector and block.

Figure 15-(Tensar MESA)-2 MESA DOT system connector and block as assembled.

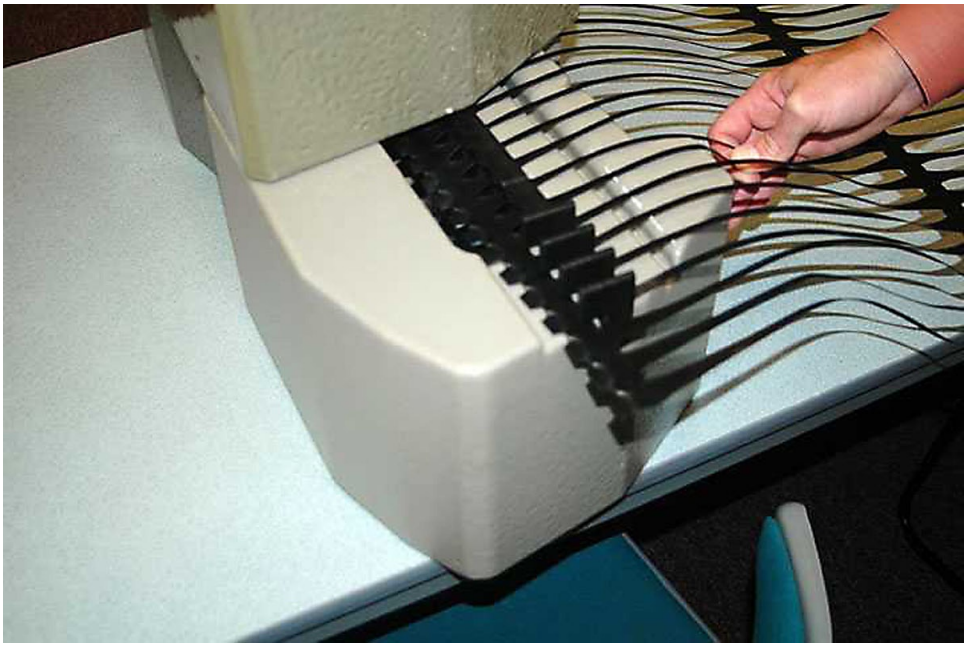

Figure 15-(Tensar MESA)-3 MESA DOT system connector and block as assembled, with block placed on top.

Block connectors for MESA wall shall be glass fiber reinforced high-density polypropylene conforming to the following minimum material specifications:

Property	Specification	Value
Fiberglass Content	ASTM D 578, Grade E	23 percent
Tensile Strength at yield	ASTM D 638	7,250 psi
Flexural Modulus	ASTM D 790	507,000 psi
Izod Impact notched 1/8 inch	ASTM D 256	0.75 ft-lb/inch
Melt Flow Rate	ASTM D 1238	6.0 gm/10 min.

Approved details for the Tensar MESA wall system with the DOT System connector are provided in the following plan sheets. Exceptions and additional requirements regarding these approved details are as follows:

- In plan sheet 5 of 13, the guard rail detail, the guard rail post shall either be installed through precut holes in the geogrid layers that must penetrated, or the geogrid layers shall be cut in a manner that prevents ripping or tearing of the geogrid.

- In plan sheets 4, 6, and 8 of 13, regarding the geotextiles and drainage composites shown, WSDOT reserves the right to require the use WSDOT Standard Specification materials as specified in Standard Specification Section 9-33 that are similar to those specified in this plan sheet.
- In plan sheet 7 of 13, regarding the geogrid at wall corner detail, cords in the wall facing alignment to form an angle point or a radius shall be no shorter than the width of the roll to insure good contact between the connectors and the geogrid cross-bar throughout the width of the geogrid. Alternatively, the geogrid roll could be cut longitudinally in half to allow a tighter radius, if necessary.
- In plan sheet 7 of 13, regarding the typical geogrid percent coverage, the maximum distance X between geogrid strips shall be one block width. Therefore, the minimum percent coverage shall be 73 percent.

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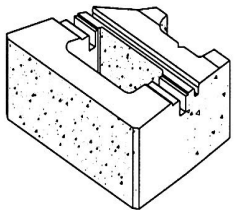
Prepared For

STATE OF WASHINGTON
DEPARTMENT OF TRANSPORTATION



mesa™

STANDARD MESA DETAILS & CONSTRUCTION NOTES

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WSDOT MESA01.DWG

THIS DESIGN IS BASED UPON SPECIFIC PROPERTIES OF TENSAR PRODUCTS (GEOGRIDS, DRAINAGE COMPOSITES AND EROSION MESH), WHICH ARE PROPRIETARY TO THE TENSAR CORPORATION 1210 CITIZENS PARKWAY, MORROW GA. 30260. ANY SUBSTITUTION OF THE SPECIFIED PRODUCTS WILL INVALIDATE THIS DESIGN. THIS DRAWING IS BEING FURNISHED FOR USE ON THIS SPECIFIC PROJECT ONLY. ANY PARTY ACCEPTING THIS DOCUMENT DOES SO IN CONFIDENCE AND AGREES THAT IT SHALL NOT BE DUPLICATED WHOLE OR IN PART, NOR DISCLOSED TO OTHERS, WITHOUT THE CONSENT OF TENSAR EARTH TECHNOLOGIES, INC.

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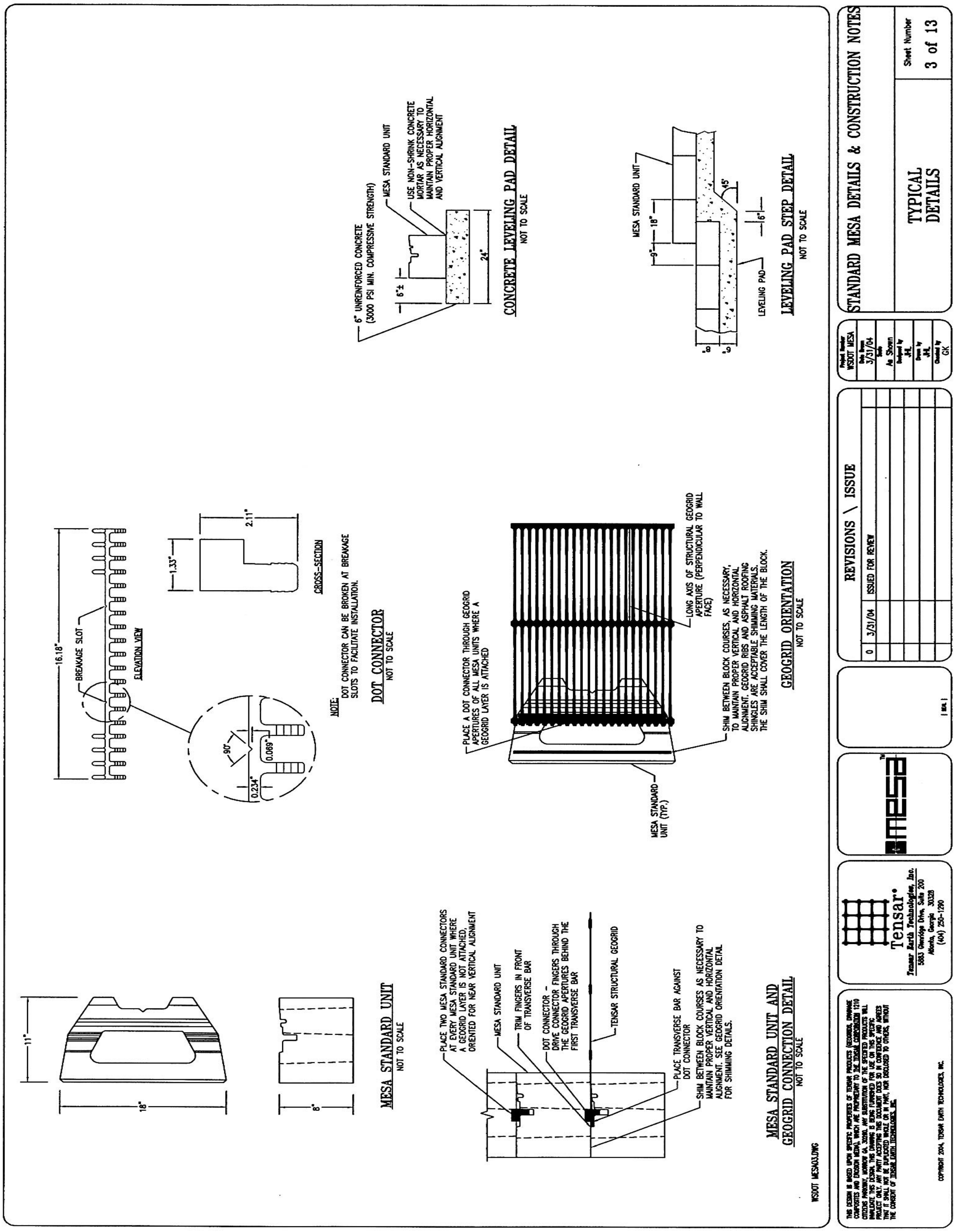
Designed by	J-H.
Drawn by	J-H.
Checked by	GK

STANDARD MESA DETAILS & CONSTRUCTION NOTES

TITLE SHEET

Sheet Number 1 of 13


MESA STANDARD UNIT
NOT TO SCALE
MESA STANDARD UNIT AND GEOGRID CONNECTION DETAIL
NOT TO SCALE
DOT CONNECTOR
NOT TO SCALE
GEOGRID ORIENTATION
NOT TO SCALE
CONCRETE LEVELING PAD DETAIL
NOT TO SCALE
LEVELING PAD STEP DETAIL
NOT TO SCALE
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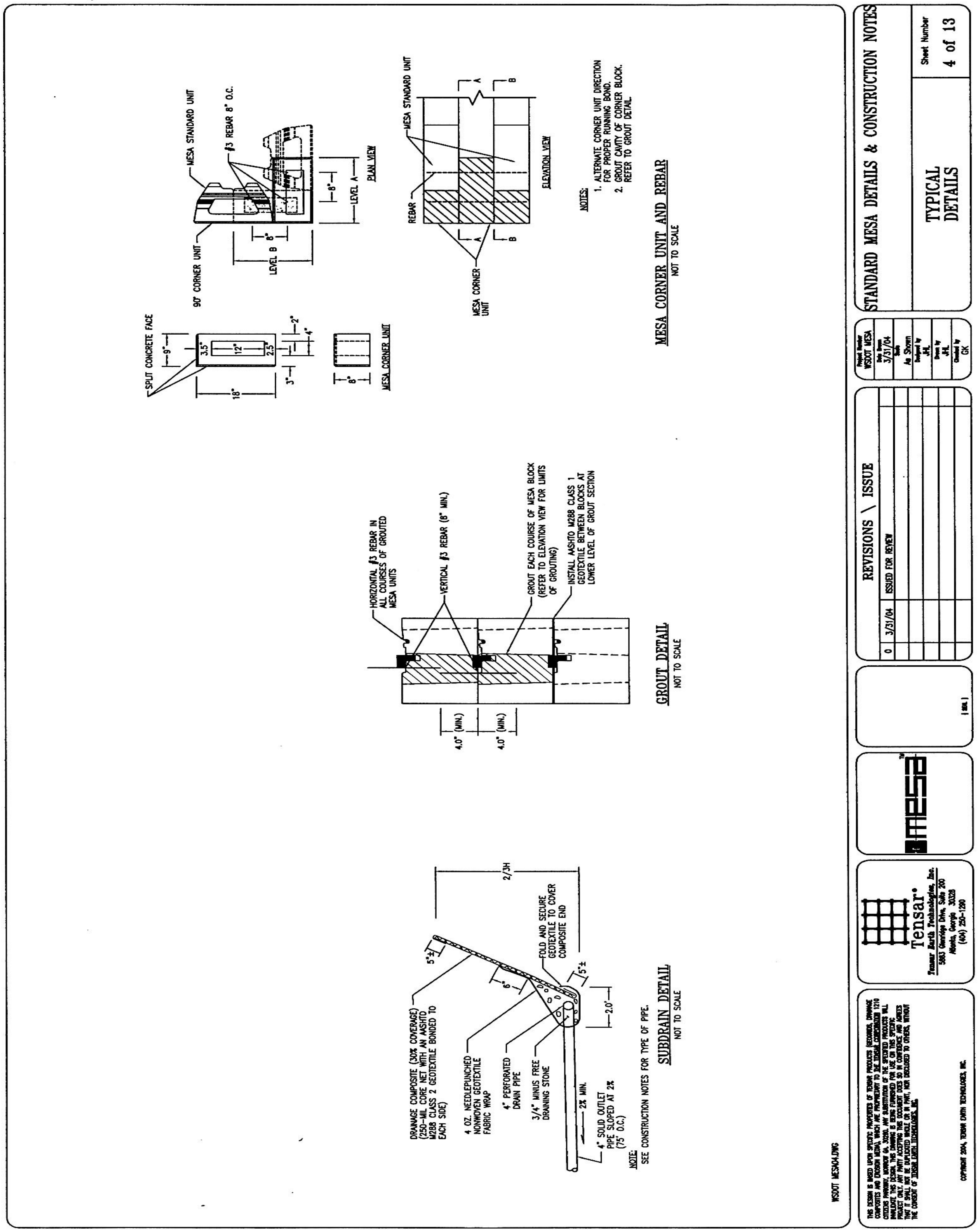
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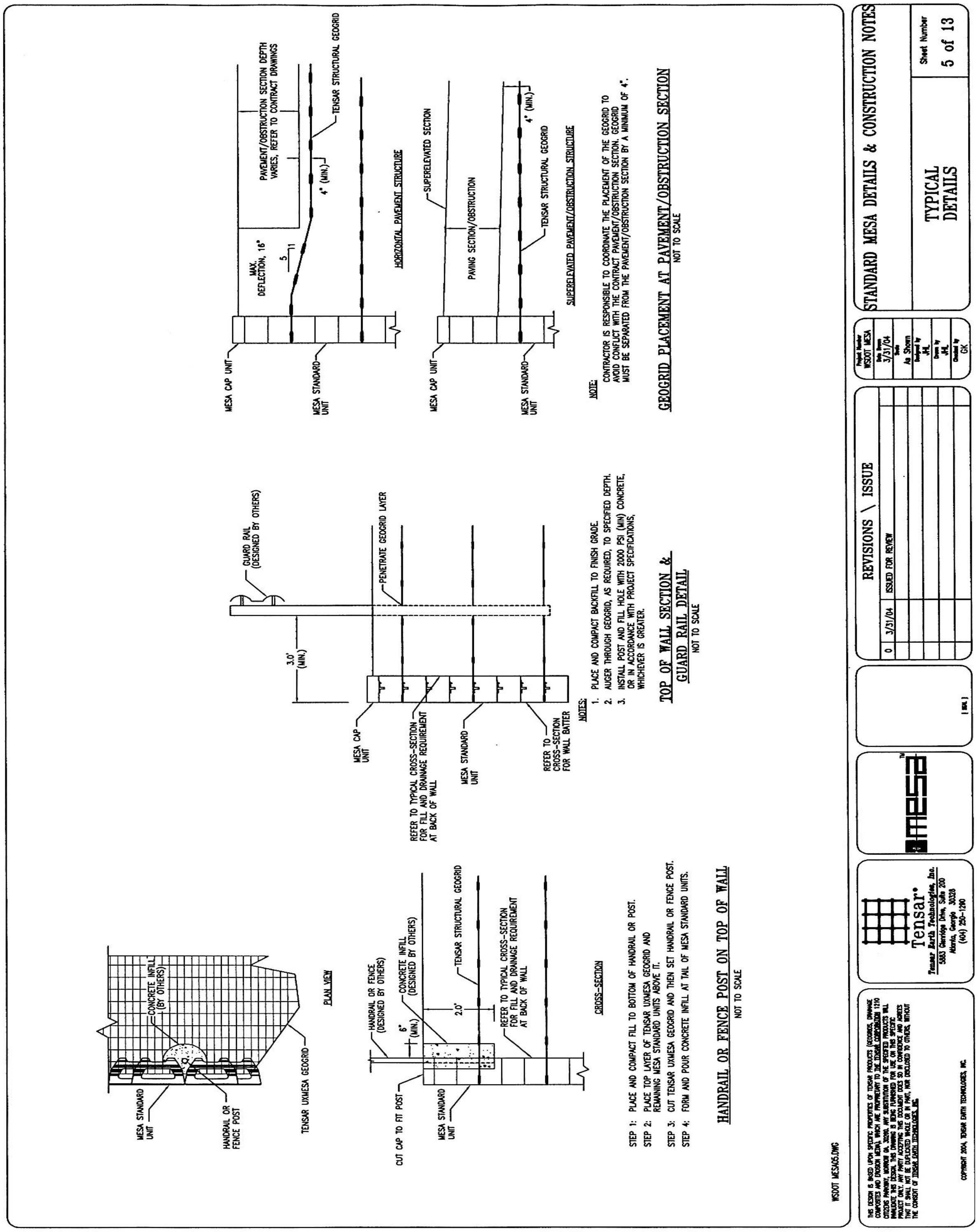
Tensar
MESA CORNER UNIT AND REBAR
NOT TO SCALE
GROUT DETAIL
NOT TO SCALE
SUBDRAIN DETAIL
NOT TO SCALE
PLAN VIEW
ELEVATION VIEW
MESA CORNER UNIT
NOTES:
1. ALTERNATE CORNER UNIT DIRECTION FOR PROPER RUNNING BOND.
2. GROUT CAVITY OF CORNER BLOCK. REFER TO GROUT DETAIL.
NOTE:
SEE CONSTRUCTION NOTES FOR TYPE OF PIPE.
WSDOT MESA04.DWG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GEOGRID PLACEMENT AT PAVEMENT/OBSTRUCTION SECTION
NOT TO SCALE
HORIZONTAL PAVEMENT STRUCTURE
SUPERELEVATED PAVEMENT/OBSTRUCTION STRUCTURE
NOTE:
CONTRACTOR IS RESPONSIBLE TO COORDINATE THE PLACEMENT OF THE GEOGRID TO AVOID CONFLICT WITH THE CONTRACT PAVEMENT/OBSTRUCTION SECTION. GEOGRID MUST BE SEPARATED FROM THE PAVEMENT/OBSTRUCTION SECTION BY A MINIMUM OF 4".
MESA CAP UNIT
MESA STANDARD UNIT
TENSAR STRUCTURAL GEOGRID
PAVEMENT/OBSTRUCTION SECTION DEPTH VARIES, REFER TO CONTRACT DRAWINGS
MAX. DEFLECTION, 16°
4" (MIN.)
SUPERELEVATED SECTION
PAVING SECTION/OBSTRUCTION
TOP OF WALL SECTION & GUARD RAIL DETAIL
NOT TO SCALE
GUARD RAIL (DESIGNED BY OTHERS)
PENETRATE GEOGRID LAYER
3.0' (MIN.)
REFER TO TYPICAL CROSS-SECTION FOR FILL AND DRAINAGE REQUIREMENT AT BACK OF WALL
REFER TO CROSS-SECTION FOR WALL BATTER
NOTES:
1. PLACE AND COMPACT BACKFILL TO FINISH GRADE.
2. AUGER THROUGH GEOGRID, AS REQUIRED, TO SPECIFIED DEPTH.
3. INSTALL POST AND FILL HOLE WITH 2000 PSI (MIN) CONCRETE, OR IN ACCORDANCE WITH PROJECT SPECIFICATIONS, WHICHEVER IS GREATER.
HANDRAIL OR FENCE POST ON TOP OF WALL
NOT TO SCALE
PLAN VIEW
CROSS-SECTION
MESA STANDARD UNIT
HANDRAIL OR FENCE POST
TENSAR UXMESA GEOGRID
CONCRETE INFILL (BY OTHERS)
CUT CAP TO FIT POST
HANDRAIL OR FENCE (DESIGNED BY OTHERS)
CONCRETE INFILL (DESIGNED BY OTHERS)
6" (MIN.)
2.0'
STEP 1: PLACE AND COMPACT FILL TO BOTTOM OF HANDRAIL OR POST.
STEP 2: PLACE TOP LAYER OF TENSAR UXMESA GEOGRID AND REMAINING MESA STANDARD UNITS ABOVE IT.
STEP 3: CUT TENSAR UXMESA GEOGRID AND THEN SET HANDRAIL OR FENCE POST.
STEP 4: FORM AND POUR CONCRETE INFILL AT TAIL OF MESA STANDARD UNITS.
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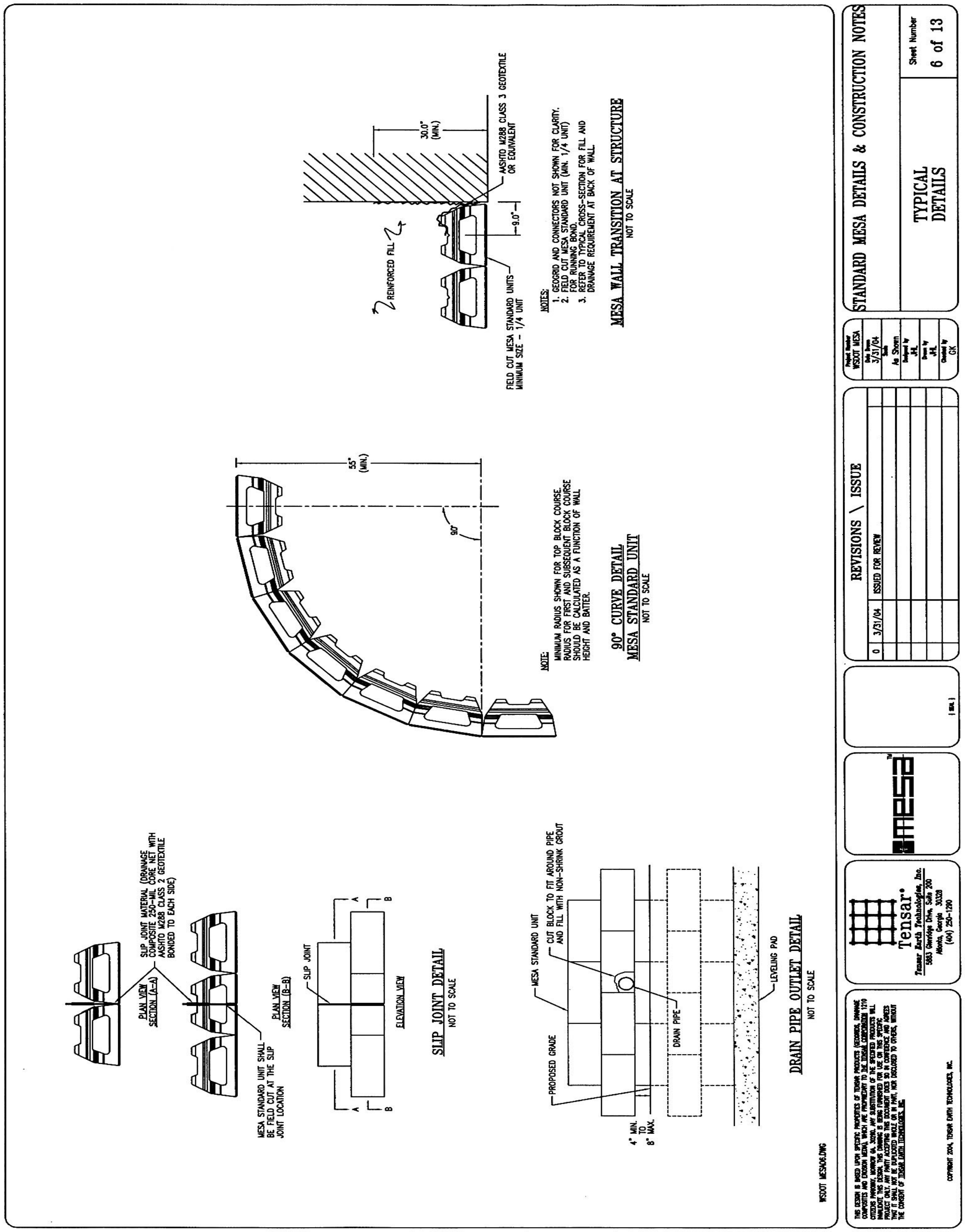
SLIP JOINT MATERIAL (DRAINAGE COMPOSITE 250-MIL CORE NET WITH AASHTO M288 CLASS 2 GEOTEXTILE BONDED TO EACH SIDE)
PLAN VIEW SECTION (A-A)
PLAN VIEW SECTION (B-B)
MESA STANDARD UNIT SHALL BE FIELD CUT AT THE SLIP JOINT LOCATION
SLIP JOINT
ELEVATION VIEW
SLIP JOINT DETAIL
NOT TO SCALE
MESA STANDARD UNIT
CUT BLOCK TO FIT AROUND PIPE AND FILL WITH NON-SHRINK GROUT
PROPOSED GRADE
DRAIN PIPE
LEVELING PAD
4" MIN. TO 8" MAX.
DRAIN PIPE OUTLET DETAIL
NOT TO SCALE
55" (MIN.)
90°
NOTE:
MINIMUM RADIUS SHOWN FOR TOP BLOCK COURSE. RADIUS FOR FIRST AND SUBSEQUENT BLOCK COURSE SHOULD BE CALCULATED AS A FUNCTION OF WALL HEIGHT AND BATTER.
90° CURVE DETAIL
MESA STANDARD UNIT
NOT TO SCALE
30.0" (MIN.)
AASHTO M288 CLASS 3 GEOTEXTILE OR EQUIVALENT
REINFORCED FILL
9.0"
MESA STANDARD UNITS
FIELD CUT MESA STANDARD UNIT MINIMUM SIZE – 1/4 UNIT
NOTES:
1. GEOGRID AND CONNECTORS NOT SHOWN FOR CLARITY.
2. FIELD CUT MESA STANDARD UNIT (MIN. 1/4 UNIT) FOR RUNNING BOND.
3. REFER TO TYPICAL CROSS-SECTION FOR FILL AND DRAINAGE REQUIREMENT AT BACK OF WALL.
MESA WALL TRANSITION AT STRUCTURE
NOT TO SCALE
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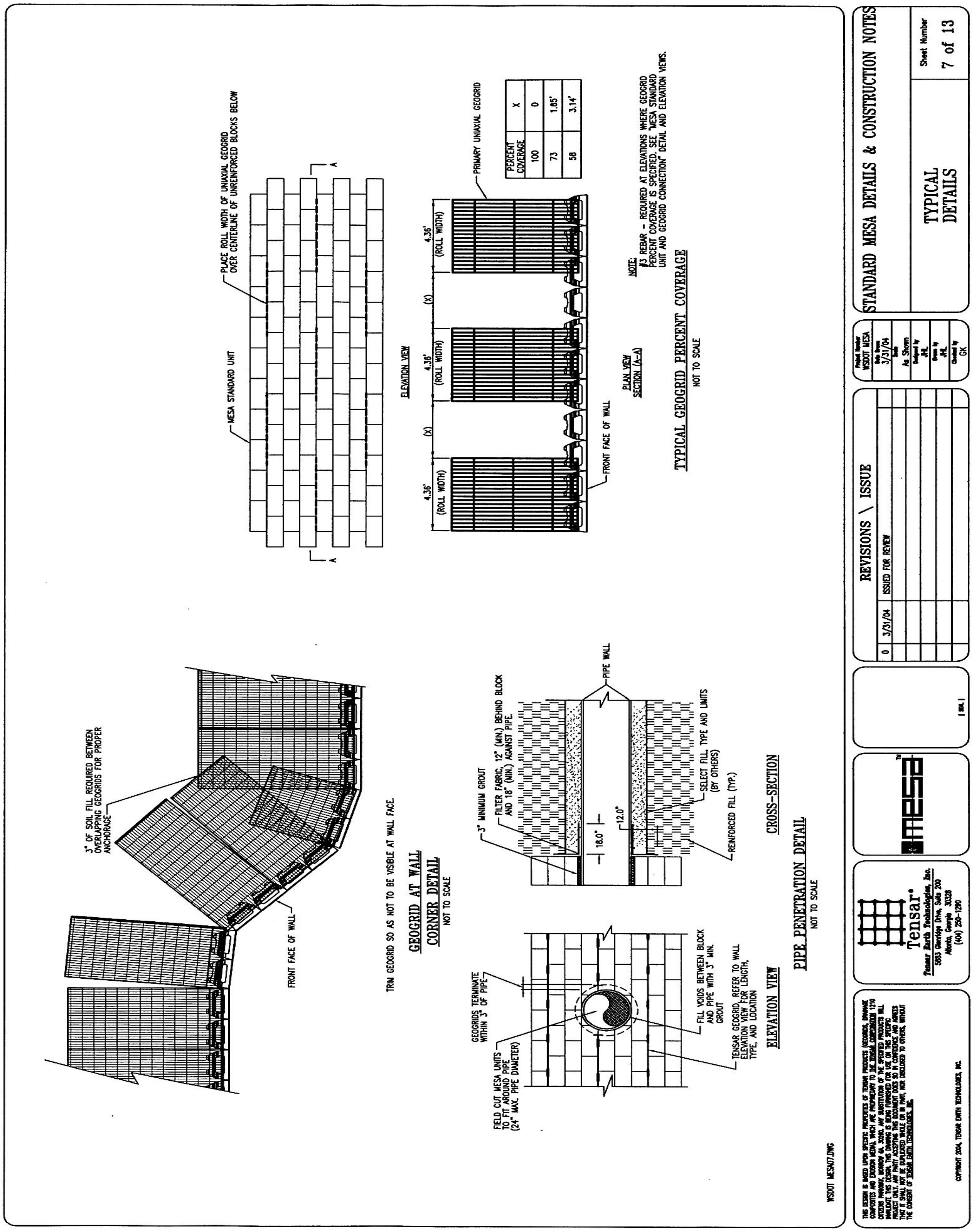
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As Shown
TYPICAL GEOGRID PERCENT COVERAGE
NOT TO SCALE
MESA STANDARD UNIT
PLACE ROLL WIDTH OF UNIAXIAL GEOGRID OVER CENTERLINE OF UNREINFORCED BLOCKS BELOW
ELEVATION VIEW
PLAN VIEW SECTION (A-A)
FRONT FACE OF WALL
4.36' (ROLL WIDTH)
(X)
PRIMARY UNIAXIAL GEOGRID
PERCENT COVERAGE | X
100 | 0
73 | 1.85'
58 | 3.14'
NOTE:
#3 REBAR - REQUIRED AT ELEVATIONS WHERE GEOGRID PERCENT COVERAGE IS SPECIFIED. SEE "MESA STANDARD UNIT AND GEOGRID CONNECTION" DETAIL AND ELEVATION VIEWS.
3" OF SOIL FILL REQUIRED BETWEEN OVERLAPPING GEOGRIDS FOR PROPER ANCHORAGE
TRIM GEOGRID SO AS NOT TO BE VISIBLE AT WALL FACE.
GEOGRID AT WALL CORNER DETAIL
NOT TO SCALE
PIPE PENETRATION DETAIL
NOT TO SCALE
ELEVATION VIEW
CROSS-SECTION
GEOGRIDS TERMINATE WITHIN 3" OF PIPE
FIELD CUT MESA UNITS TO FIT AROUND PIPE (24" MAX. PIPE DIAMETER)
FILL VOIDS BETWEEN BLOCK AND PIPE WITH 3" MIN. GROUT
TENSAR GEOGRID. REFER TO WALL ELEVATION VIEW FOR LENGTH, TYPE, AND LOCATION
3" MINIMUM GROUT
FILTER FABRIC, 12" (MIN.) BEHIND BLOCK AND 18" (MIN.) AGAINST PIPE.
PIPE WALL
SELECT FILL, TYPE AND LIMITS (BY OTHERS)
REINFORCED FILL (TYP.)
18.0"
12.0"
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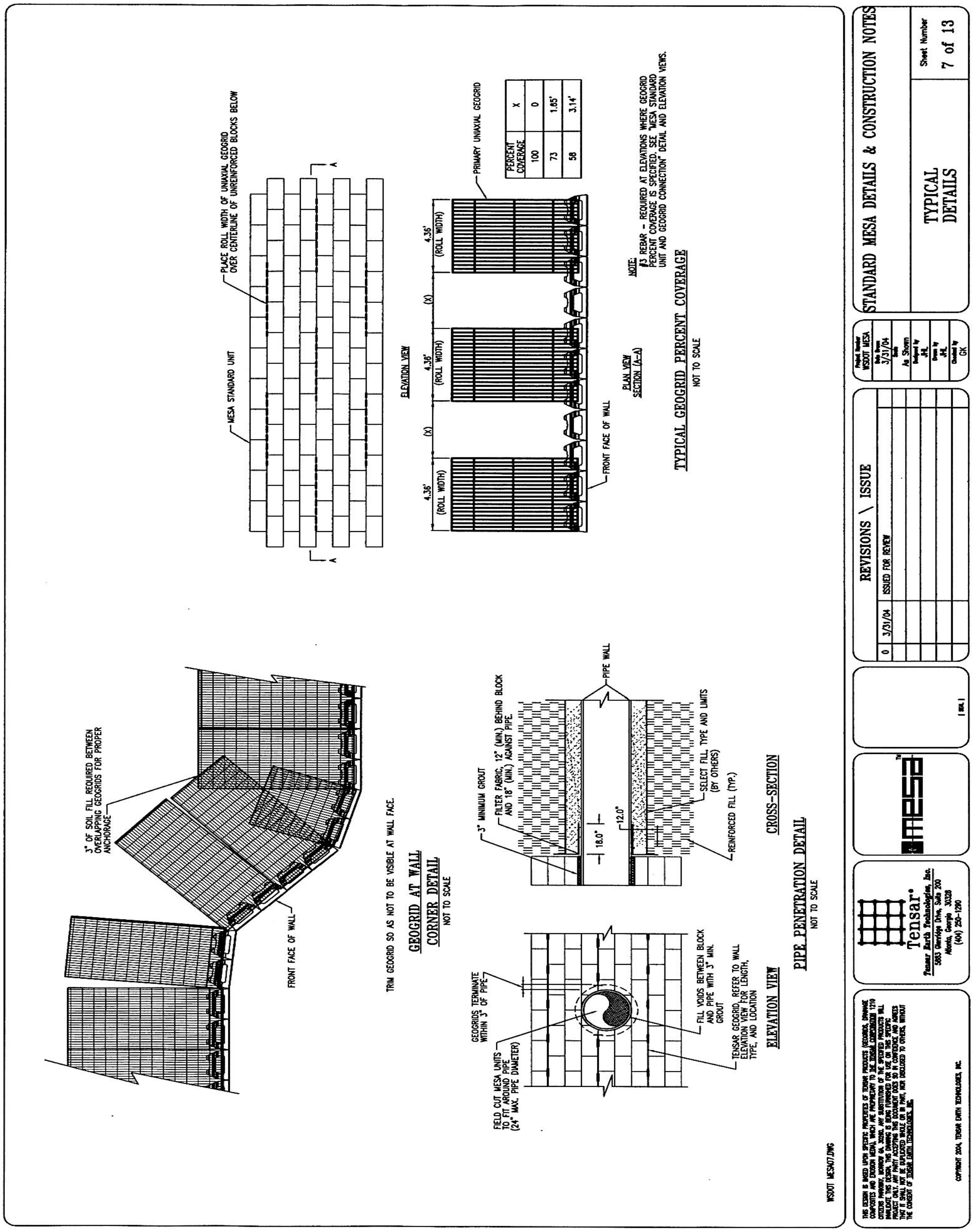
3" OF SOIL FILL REQUIRED BETWEEN OVERLAPPING GEOGRIDS FOR PROPER ANCHORAGE
FRONT FACE OF WALL
TRIM GEOGRID SO AS NOT TO BE VISIBLE AT WALL FACE.
GEOGRID AT WALL CORNER DETAIL
NOT TO SCALE
GEOGRIDS TERMINATE WITHIN 3" OF PIPE
FIELD CUT MESA UNITS TO FIT AROUND PIPE (24" MAX. PIPE DIAMETER)
FILL VOIDS BETWEEN BLOCK AND PIPE WITH 3" MIN. GROUT
TENSAR GEOGRID, REFER TO WALL ELEVATION VIEW FOR LENGTH, TYPE, AND LOCATION
ELEVATION VIEW
3" MINIMUM GROUT
FILTER FABRIC, 12" (MIN.) BEHIND BLOCK AND 18" (MIN.) AGAINST PIPE.
18.0"
12.0"
PIPE WALL
SELECT FILL, TYPE AND LIMITS (BY OTHERS)
REINFORCED FILL (TYP.)
CROSS-SECTION
PIPE PENETRATION DETAIL
NOT TO SCALE
MESA STANDARD UNIT
PLACE ROLL WIDTH OF UNIAXIAL GEOGRID OVER CENTERLINE OF UNREINFORCED BLOCKS BELOW
A
A
ELEVATION VIEW
4.36' (ROLL WIDTH)
(X)
4.36' (ROLL WIDTH)
(X)
4.36' (ROLL WIDTH)
PRIMARY UNIAXIAL GEOGRID
PERCENT COVERAGE | X
100 | 0
73 | 1.65'
58 | 3.14'
FRONT FACE OF WALL
PLAN VIEW SECTION (A-A)
NOTE:
#3 REBAR – REQUIRED AT ELEVATIONS WHERE GEOGRID PERCENT COVERAGE IS SPECIFIED. SEE "MESA STANDARD UNIT AND GEOGRID CONNECTION" DETAIL AND ELEVATION VIEWS.
TYPICAL GEOGRID PERCENT COVERAGE
NOT TO SCALE
WSDOT MESA07.DWG
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FABRIC DRAINAGE SPECIFICATION

Geotextile may be used in lieu of aggregate for the drainage medium behind the Mesa facing units if the select fill used in the reinforced zone, as a minimum, complies with the AASHTO Guidelines for Mechanically Stabilized Earth Retaining Walls. Section 5.8, Mechanically Stabilized Earth (MSE) Wall Design of the 2002 AASHTO guidelines defines the soil's physical properties.

An eight (8) oz per square yard nonwoven needle punched geotextile, AASHTO M288 CLASS 1, shall be used as the filter medium.

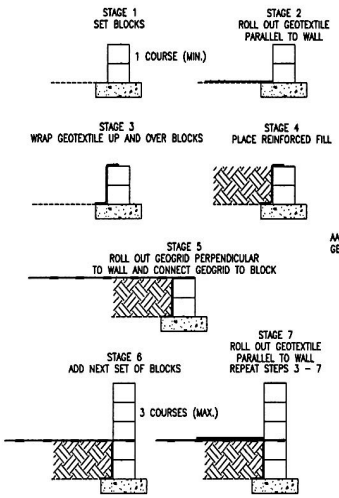
Unless otherwise approved by Tensar, the geotextile shall be delivered to the project site in rolls that have been factory cut to the specified widths for the installation.

INSTALLATION PROCEDURE

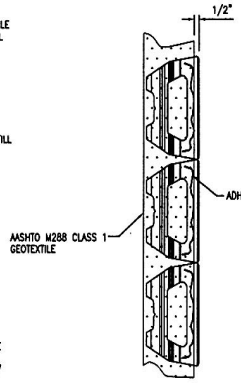
1. Install each course of the Mesa facing units between the top of the last geogrid placed and the bottom of the next layer of geogrid above as shown on the approved construction drawings. The facing units shall be aligned and leveled in accordance with the wall installation guide.
2. Prior to placing the select backfill, the geotextile shall be placed behind the units such that a minimum of six (6) inches of material is turned into the fill at the top and the bottom. The geotextile shall then be adjusted to present a relatively smooth surface.
3. The select backfill shall then be placed and compacted in accordance with the approved construction drawings and project specifications.
4. After the select backfill has been compacted and properly graded for the installation of the next layer of geogrid reinforcement, the geotextile on the top units can remain in position on the facing unit (see Stage 4 detail) or be pulled back onto the backfill (contractor's option).
5. Install the geogrid reinforcement and repeat the process commencing with Item 1.
6. After the last level of primary geogrid reinforcement has been placed, install the remaining courses of Mesa facing units except for the last standard course and the cap units, in accordance with the details on the approved construction drawings.
7. Place a line of an approved construction adhesive along the top of the Mesa Standard units approximately one (1) inch behind the face as shown in Detail S1.
8. Place the eight (8) oz. geotextile such that the leading edge of the material is approximately 1/2 inch behind the face and press into the adhesive. The bottom of the geotextile shall extend a minimum of six (6) inches into the select fill. Allow adhesive to obtain an initial set for approximately 20 minutes (Detail S1).
9. Install the Mesa connectors in the slots as shown in the wall installation guide. Connectors will push the fabric into the slot as shown in the Typical Section, this sheet.
10. Install the last course of Mesa Standard units and align and level as required in the installation guide.
11. Place a line of adhesive in the depressed area between the connector slot and the face of the unit per Detail S2.
12. Install the eight (8) oz. geotextile such that the leading edge of the material just contacts the step at the edge of the depressed area as shown in the Typical Section, this sheet. The bottom of the geotextile shall extend a minimum of six (6) inches beyond the geotextile in the Mesa Standard unit.
13. Place a line of adhesive along the top of the Standard units just behind the face per Detail S3.
14. Install the cap units as shown in Detail S4.

Geotextile widths required for the detail:

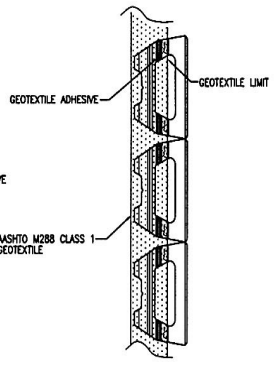
AASHTO M288 Class 1: 36 inch



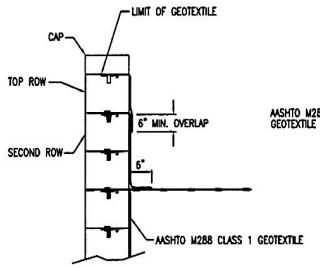
STAGES OF GEOTEXTILE LAYOUT
MESA WALL
GEOTEXTILE SEPARATOR
NOT TO SCALE



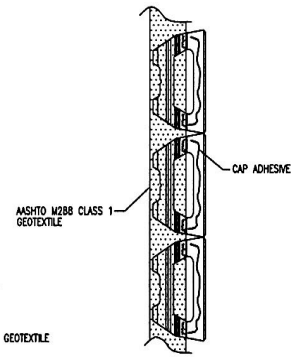
GEOTEXTILE ON
SECOND ROW MESA UNIT
DETAIL S1



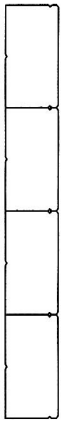
GEOTEXTILE ON
TOP MESA UNIT
DETAIL S2



TYPICAL SECTION
NOT TO SCALE



CAP ADHESIVE
DETAIL S3



MESA CAP
DETAIL S4

WSDOT MESA08.DWG

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[SEAL]

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Project Number	WSDOT MESA
Date Drawn	3/31/04
Scale	As Shown
Designed by	JHL
Drawn by	JHL
Checked by	GK

STANDARD MESA DETAILS & CONSTRUCTION NOTES

FABRIC SEPARATOR
DETAIL

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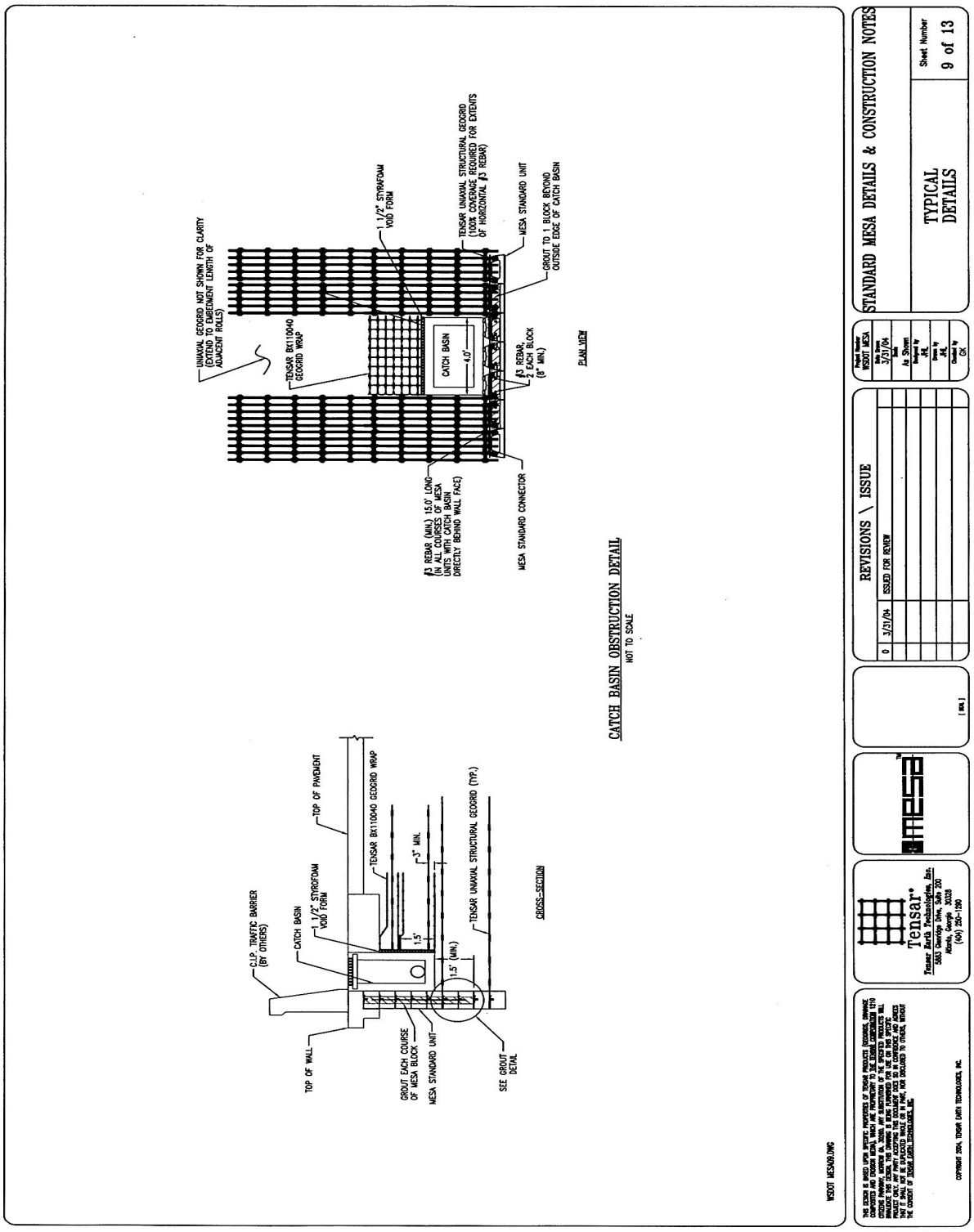
Appendix 15 (Tensar MESA Wall)


UNIAXIAL GEOGRID NOT SHOWN FOR CLARITY (EXTEND TO EMBEDMENT LENGTH OF ADJACENT ROLLS)
TENSAR BX1100/40 GEOGRID WRAP
1 1/2" STYROFOAM VOID FORM
TENSAR UNIAXIAL STRUCTURAL GEOGRID (100% COVERAGE REQUIRED FOR EXTENTS OF HORIZONTAL #3 REBAR)
MESA STANDARD UNIT
GROUT TO 1 BLOCK BEYOND OUTSIDE EDGE OF CATCH BASIN
CATCH BASIN
4.0'
#3 REBAR, 2 EACH BLOCK (8" MIN.)
#3 REBAR (MIN.) 15.0' LONG IN ALL COURSES OF MESA UNITS WITH CATCH BASIN DIRECTLY BEHIND WALL FACE)
MESA STANDARD CONNECTOR
PLAN VIEW
CATCH BASIN OBSTRUCTION DETAIL
NOT TO SCALE
C.I.P. TRAFFIC BARRIER (BY OTHERS)
CATCH BASIN
1 1/2" STYROFOAM VOID FORM
TOP OF PAVEMENT
TENSAR BX1100/40 GEOGRID WRAP
3" MIN.
1.5'
1.5' (MIN.)
TENSAR UNIAXIAL STRUCTURAL GEOGRID (TYP.)
TOP OF WALL
GROUT EACH COURSE OF MESA BLOCK
MESA STANDARD UNIT
SEE GROUT DETAIL
CROSS-SECTION
WSDOT MESA09.DWG
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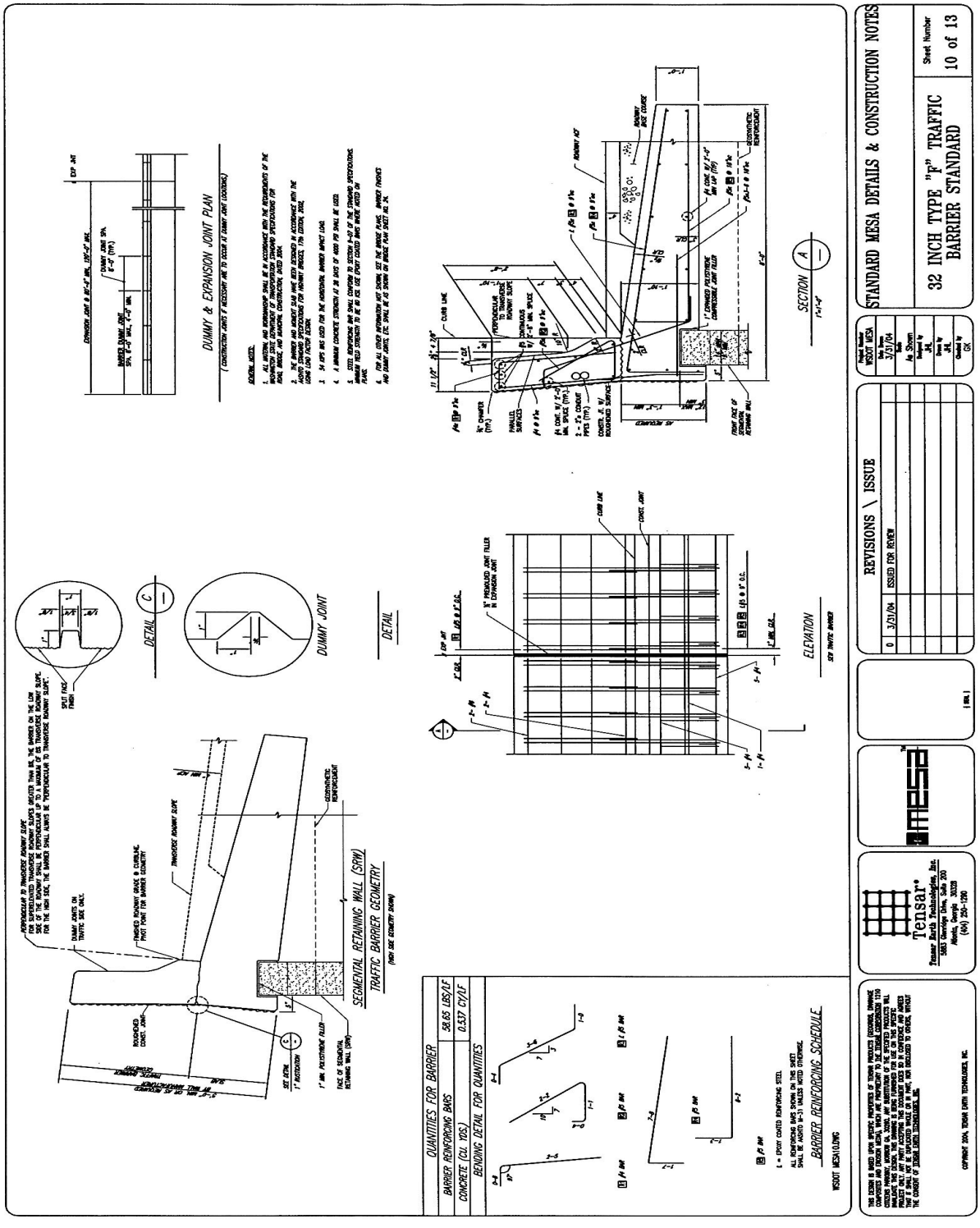
Drawn by JHL
Checked by CJK
STANDARD MESA DETAILS & CONSTRUCTION NOTES
TYPICAL DETAILS
Sheet Number 9 of 13


STANDARD MESA DETAILS & CONSTRUCTION NOTES
32 INCH TYPE "F" TRAFFIC BARRIER STANDARD
Sheet Number 10 of 13
REVISIONS \ ISSUE
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DUMMY & EXPANSION JOINT PLAN
DUMMY JOINT
DETAIL
SEGMENTAL RETAINING WALL (SRW) TRAFFIC BARRIER GEOMETRY
(HIGH SIDE GEOMETRY SHOWN)
ELEVATION
SECTION
QUANTITIES FOR BARRIER
BARRIER REINFORCING BARS 38.65 LBS/LF
CONCRETE (CU. YDS.) 0.537 CY/LF
BENDING DETAIL FOR QUANTITIES
BARRIER REINFORCING SCHEDULE
NTS
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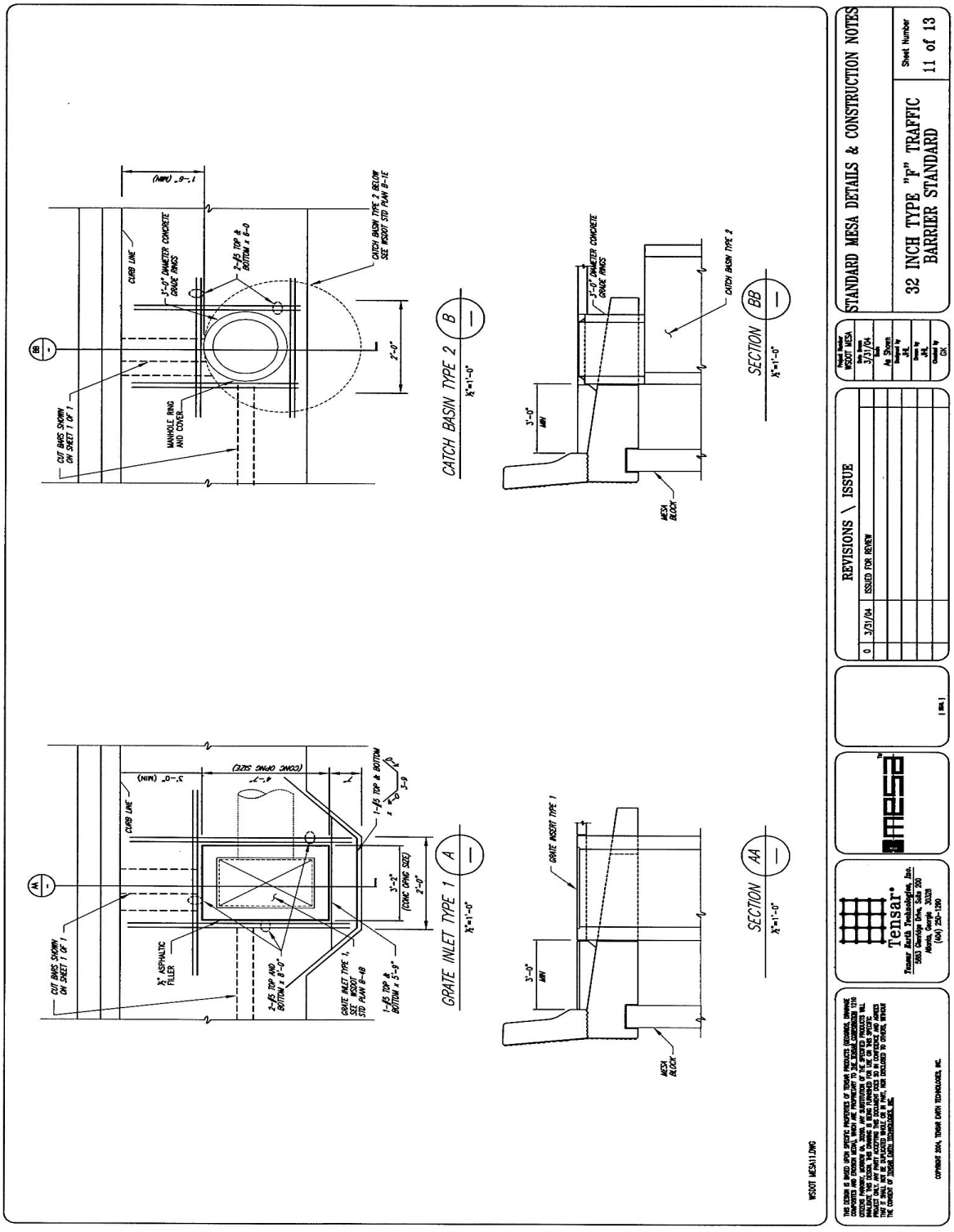
CATCH BASIN TYPE 2
SECTION
GRATE INLET TYPE 1
SECTION
CURB LINE
CUT BARS SHOWN ON SHEET 1 OF 1
MANHOLE RING AND COVER
CATCH BASIN TYPE 2 SEE WSDOT STD PLAN B-1E
MESA BLOCK
GRATE INSERT TYPE 1
ASPHALTIC FILLER
WSDOT MESA11.DWG
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STANDARD MESA DETAILS & CONSTRUCTION NOTES
32 INCH TYPE "F" TRAFFIC BARRIER STANDARD
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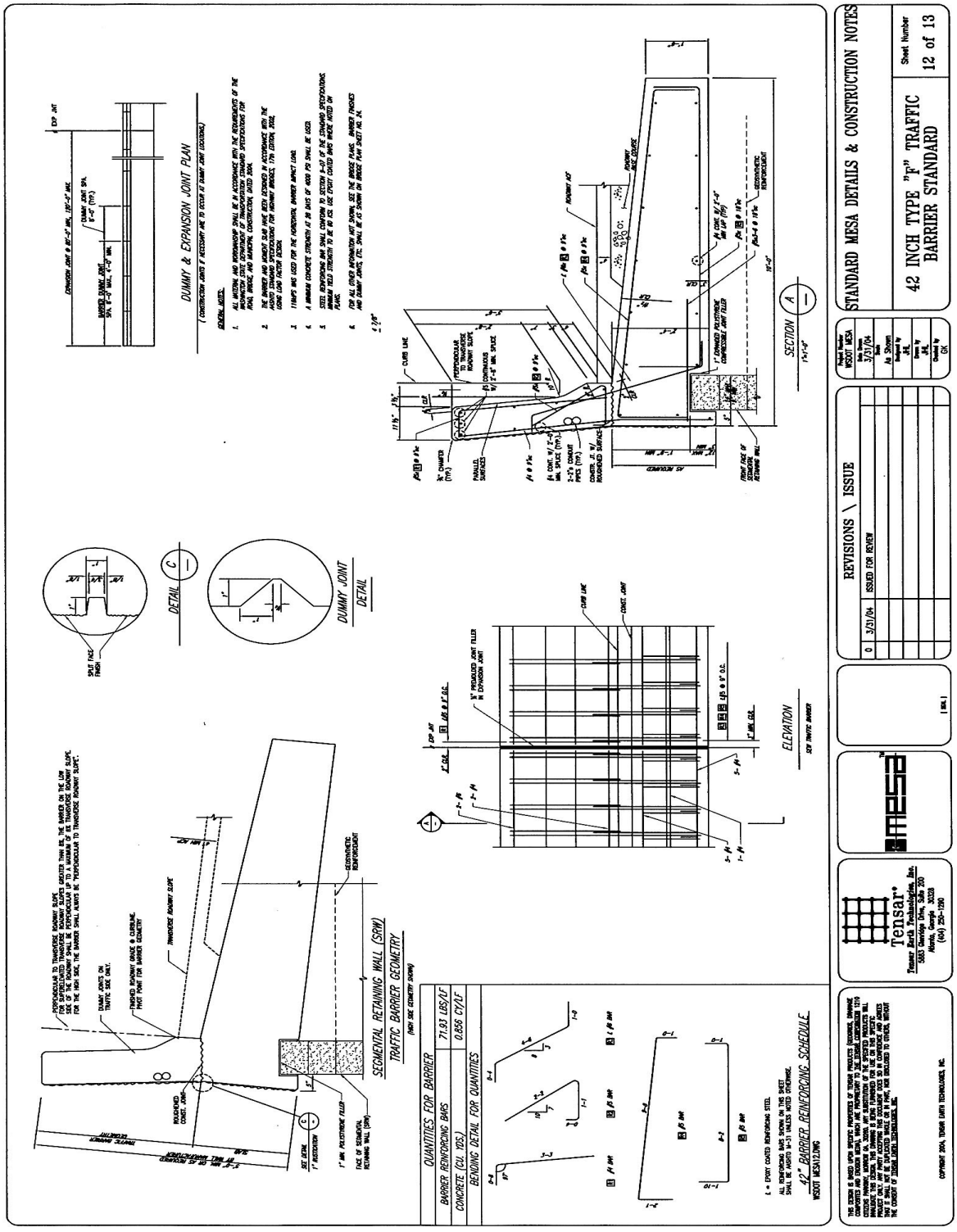
DUMMY & EXPANSION JOINT PLAN
DETAIL C
DUMMY JOINT DETAIL
SEGMENTAL RETAINING WALL (SRW)
TRAFFIC BARRIER GEOMETRY
ELEVATION
SECTION A
QUANTITIES FOR BARRIER
BARRIER REINFORCING BARS 71.93 LBS/LF
CONCRETE (CU. YDS.) 0.856 CY/LF
BENDING DETAIL FOR QUANTITIES
42" BARRIER REINFORCING SCHEDULE
WSDOT MESA12WG
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STANDARD MESA DETAILS & CONSTRUCTION NOTES
42 INCH TYPE "F" TRAFFIC BARRIER STANDARD
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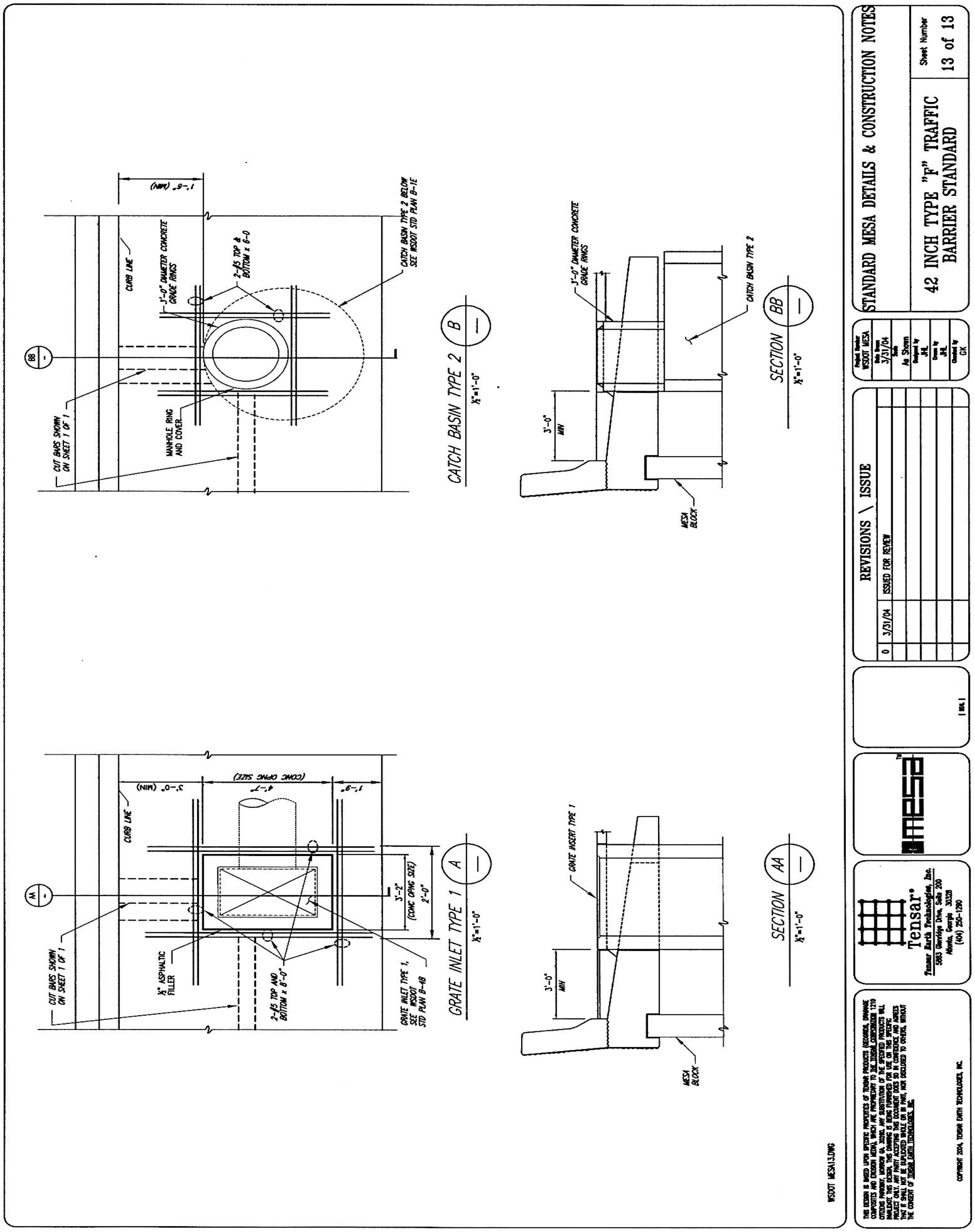

STANDARD MESA DETAILS & CONSTRUCTION NOTES
42 INCH TYPE "F" TRAFFIC BARRIER STANDARD
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REVISIONS \ ISSUE
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CATCH BASIN TYPE 2
GRATE INLET TYPE 1
SECTION AA
SECTION BB
CURB LINE
MESA BLOCK
WSDOT MESA13.DWG